

S/N: 10/541,175
Page 2 of 7

RECEIVED
CENTRAL FAX CENTER
MAR 02 2009

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently amended) A glass for laser processing that is processed through laser beam irradiation,

wherein the glass for laser processing has a composition that satisfies the following relationships:

$$40 \leq M[\text{NFO}] \leq 70;$$

$$5 \leq (M[\text{TiO}_2]) \leq 45; \text{ and}$$

$$5 \leq M[\text{NMO}] \leq 40,$$

where M[NFO], M[TiO₂], and M[NMO] denote the content by percentage of network forming oxides (mol%), that of TiO₂ (mol%), and that of network modifying oxides (mol%), respectively,

the composition contains 20 to 40 mol% of Na₂O, and

the composition essentially is free from Y₂O₃.

2. (Original) The glass for laser processing according to claim 1, wherein the network forming oxides are at least one oxide selected from SiO₂ and B₂O₃, the network modifying oxides are at least one oxide selected from alkali metal oxides and alkaline earth metal oxides, and the composition further satisfies the following relationship:

$$5 \leq (M[\text{TiO}_2] + M[\text{Al}_2\text{O}_3]) \leq 45,$$

where M[Al₂O₃] denotes the content by percentage of Al₂O₃ (mol%).

3. (Original) The glass for laser processing according to claim 2, wherein a value f_m defined by the following formula is 1.35 or lower:

$$f_m = (\sum x_i C_i Z_i / (r_i + r_0)^2) / \sum x_i C_i,$$

where x_i denotes a molar fraction for which oxides (i) containing cations (i) other than alkali metal ions and alkaline earth metal ions account in the composition; C_i indicates the number of the cations (i) included in composition formulae of the oxides (i); Z_i denotes valences of the

S/N: 10/541,175

Page 3 of 7

cations (i); and r_i and r_o indicate values expressing ion radii of the cations (i) and oxide ions by angstrom, respectively.

4. (Original) The glass for laser processing according to claim 2, wherein a value F_m defined by the following formula is $400 \text{ kJ} \cdot \text{mol}^{-1}$ or lower:

$$F_m = \sum x_j C_j E_d / \sum x_j C_j N_j$$

where x_j denotes a molar fraction for which oxides (j) other than alkali metal oxides and alkaline earth metal oxides account in the composition; C_j indicates the number of cations (j) included in composition formulae of the oxides (j); E_d denotes dissociation energy of the oxides (j) expressed with a composition ratio of the cations (j) being 1; and N_j indicates the number of oxide ions coordinated to the cations (j) in the oxides (j).

5. (Original) The glass for laser processing according to claim 4, satisfying a relationship of $(F_m / \alpha) \leq 0.13$ when the value F_m and an absorption coefficient α of the glass for laser processing are expressed by the same unit.

6. (Original) The glass for laser processing according to claim 2, wherein the glass for laser processing is composed essentially of SiO_2 , TiO_2 , and at least one oxide selected from the alkali metal oxides and alkaline earth metal oxides, and the number of Si-O-Ti bonds per SiO_4 unit is at least 0.4.

7. (Original) The glass for laser processing according to claim 2, wherein the glass for laser processing is composed essentially of SiO_2 , TiO_2 , and at least one oxide selected from the alkali metal oxides and alkaline earth metal oxides, and satisfies the following relationships:

$$N_{BO}^I / \alpha \leq 11 \times 10^{-6} \text{ cm when } M_{Si} N_{NBO}^I - 2M_{Ti} > 0; \text{ and}$$

$$N_{BO} / \alpha \leq 11 \times 10^{-6} \text{ cm when } M_{Si} N_{NBO}^I - 2M_{Ti} \leq 0,$$

where M_{Si} and M_{Ti} denote molar fractions of Si and Ti contained in the glass for laser processing, respectively; N_{BO}^I and N_{NBO}^I indicate the number of bridging oxygen atoms and the number of non-bridging oxygen atoms, respectively, in a glass structure that is free from Ti; α denotes an

S/N: 10/541,175

Page 4 of 7

absorption coefficient (unit: cm^{-1}) of the glass for laser processing; and N_{BO} indicates the number of oxygen atoms, per SiO_4 unit, that each still is cross-linking two Si atoms even after introduction of Ti.

8. (Currently amended) A glass for laser processing that is processed through laser beam irradiation,

wherein the glass for laser processing has a composition that satisfies the following conditions:

$$[[40]] \ 45 \leq M[\text{SiO}_2] \leq [[60]] \ 55;$$

$$[[10]] \ 15 \leq M[\text{Al}_2\text{O}_3] \leq 20;$$

$$10 \leq M[\text{TiO}_2] \leq [[20]] \ 15; \text{ and}$$

$$10 \leq M[\text{MgO}] \leq [[35]] \ 25,$$

where $M[\text{SiO}_2]$, $M[\text{Al}_2\text{O}_3]$, $M[\text{TiO}_2]$, and $M[\text{MgO}]$ denote the content by percentage of SiO_2 (mol%), that of Al_2O_3 (mol%), that of TiO_2 (mol%), and that of MgO (mol%), respectively, and the composition essentially is free from Y_2O_3 .

9. (Previously presented) The glass for laser processing according to claim 1, wherein the glass consists essentially of TiO_2 , at least one oxide selected from a group consisting of SiO_2 , B_2O_3 , GeO_2 , P_2O_5 , and ZrO_2 , and at least one oxide selected from a group consisting of alkali metal oxides, alkaline earth metal oxides, ZnO , Ga_2O_3 , SnO_2 , In_2O_3 , La_2O_3 , Sc_2O_3 , CeO_2 , and MnO_2 .

10. (Previously presented) The glass for laser processing according to claim 9, wherein the glass further contains at least one oxide selected from a group consisting of Sb_2O_3 and Al_2O_3 .

11. (Previously presented) The glass for laser processing according to claim 1, wherein the glass consists essentially of TiO_2 , at least one oxide selected from a group consisting of SiO_2 , B_2O_3 , GeO_2 , P_2O_5 , and ZrO_2 , and at least one oxide selected from a group consisting of alkali metal oxides and alkaline earth metal oxides.

S/N: 10/541,175

Page 5 of 7

12. (Previously presented) The glass for laser processing according to claim 11, wherein the glass further contains at least one oxide selected from a group consisting of Sb_2O_3 and Al_2O_3 .

13. (Previously presented) The glass for laser processing according to claim 8, wherein the glass consists essentially of 40 to 60 mol% of SiO_2 , 10 to 20 mol% of Al_2O_3 , 10 to 20 mol% of TiO_2 , 10 to 35 mol% of MgO , 0 to 5 mol% of alkali metal oxides, and 0 to 10 mol% of alkaline earth metal oxides other than MgO .

14. (Previously presented) The glass for laser processing according to claim 13, wherein the glass further contains at least one oxide selected from a group consisting of Sb_2O_3 and CeO_2 .